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ABSTRACT

Defining selective listening as an intelligence gathering technique that depends on an individual's ability to access, monitor, and report oral messages accurately and to give processing priority to messages of possible intelligence value, this report describes one important application of the technique: overhearing the conversations of others ("target conversations"). It considers several problems involved in this activity, including moving within earshot of these conversations, picking up and storing their information, and recounting their contents. It then presents procedures for overcoming these problems along with supporting experimental evidence. (FL)

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Research Report 1215

GUIDELINES FOR EFFECTIVE SELECTIVE LISTENING

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FOREWORD

The Training Technical Area of the US Army Research Institute for the Behavioral and Social Sciences (ARI) has actively pursued a program of research in support of the systems engineering of training. A major focus of this research is to develop the fundamental data and technology necessary to field integrated systems for improving job performance. Such systems include Skill Qualification Testing (SQT), job performance aids, performance criteria, management and feedback systems, and training courses in schools and in the field. This report summarizes the first step in the development of methods to enhance the intelligence gathering skills of military attaches. This research is in response to the question, from the Defense Intelligence Agency/Defense Intelligence School, "What training may enhance the accurate reception, understanding, and reporting of important oral messages?" Work was accomplished by ARI personnel, under Army Project 2Q763731A770, FY 1979, "Performance-Oriented Individual Skill Development and Evaluation." The helpful comments of COL Homer E. Schott (Ret) are gratefully acknowledged.

JOSEPH ZEIDNER
Technical Director

GUIDELINES FOR EFFECTIVE SELECTIVE LISTENING

BRIEF

Requirement:

To identify the problems involved in selective listening and to recommend procedures for handling them.

Procedure:

Selective listening is intended, primarily, as an intelligence gathering technique. It involves focusing attention on oral messages of possible intelligence value. This review describes one important application of the technique, namely, overhearing the conversations of others (hereafter referred to as "target conversations"). The problems considered include moving within earshot of target conversations (accessing), picking up and storing their information (monitoring), and recounting their contents (reporting). Procedures for overcoming these problems appear with supporting experimental evidence.

Findings:

(a) The accessibility of target conversations is likely to be poor. A selective listener may be able to enhance this accessibility by feigning interest in other, unrelated "cover" activities. In selecting a cover activity, one should strive to engage in simple, well-practiced behaviors which do not require active verbal participation. Techniques for reducing the need to speak include working with a confederate, engaging in group discussions, using short phrases that entail extensive replies, and choosing a conversant who will do more speaking than listening.

(b) The ability to monitor target conversations may be impaired by background noise or by cover activities that impose heavy demands on attention. A selective listener may be able to enhance this ability through training. It also may be facilitated by maintaining some visual contact with the target conversants, having advance information about the probable content of their speech, or by situating oneself (right-handers) so that they are to the right, rather than to the left or to the rear.

(c) Problems associated with reporting target information include minimizing forgetting and furthering efforts to establish the credibility of information that has been picked up. The ability to recount information from target conversations can be improved by strengthening the representation of this information in memory. This may be accomplished

by paying more attention to it, emphasising its organization, or using mediators, images, and mnemonics. Performance at the time of recall may be boosted further by minimizing the time newly learned information must persist in memory, extending the time taken for its retrieval, and maximizing the availability of retrieval cues.

Listeners can help establish the credibility of their reports by indicating their confidence in the accuracy or their recall and by noting how the target message was delivered and who delivered it to whom.

Utilization of Findings:

The conclusions and implications of previous research provide a firm basis for specific, ongoing programs to develop procedures that the Army can use to enhance its foreign intelligence gathering and reporting capabilities.

GUIDELINES FOR EFFECTIVE SELECTIVE LISTENING

CONTENTS

	PAGE
INTRODUCTION	1
GUIDELINES FOR EFFECTIVE SELECTIVE LISTENING	1
ACCESSING TARGET CONVERSATIONS	1
HOW CAN ONE ENHANCE THE ACCESSIBILITY OF A TARGET CONVERSATION?	1
HOW DOES ONE SELECT A COVER ACTIVITY?	2
AVOID COVER ACTIVITIES WHICH IMPOSE STRENUOUS DEMANDS ON ATTENTION	2
AVOID SITUATIONS WHICH REQUIRE ACTIVE VERBAL PARTICIPATION	2
HOW CAN ONE AVOID SPEAKING DURING SELECTIVE LISTENING?	3
CONVERSE WITH A CONFEDERATE	3
ENGAGE IN GROUP DISCUSSIONS	3
USE SHORT PHRASES THAT ENTAIL EXTENSIVE REPLIES	4
CHOOSE A CONVERSANT WHO WILL DO MORE SPEAKING THAN LISTENING	4

CONTENTS (CONTINUED)

	PAGE
MONITORING TARGET CONVERSATIONS	5
CAN ONE BE TRAINED TO LISTEN THROUGH BACKGROUND NOISE OR OPERATE EFFECTIVELY UNDER CONDITIONS OF DIVIDED ATTENTION?	5
TRAINING ENHANCES THE INTELLIGIBILITY OF SPEECH IN NOISE	5
TRAINING FACILITATES PERFORMANCE IN SITUATIONS DEMANDING DIVIDED ATTENTION	6
WHAT TRAINING PROCEDURES MAY ENHANCE SELECTIVE LISTENING?	6
SELECTIVE LISTENING IN BACKGROUND NOISE CAN BE SIMULATED USING A RADIO (OR TELEVISION) AND TAPE RECORDER	7
SELECTIVE LISTENING UNDER CONDITIONS OF DIVIDED ATTENTION CAN BE SIMULATED USING TWO PAIRS OF CONVERSANTS, EACH PAIR CONSISTING OF A SPEAKER AND A LISTENER	7
WHAT STRATEGIES CAN A LISTENER EMPLOY DURING PERFORMANCE TO ENHANCE THE PROCESSING OF TARGET INFORMATION?	8
WHEN OPERATING IN HEAVY BACKGROUND NOISE, IT MAY BE BENEFICIAL TO MAINTAIN SOME VISUAL CONTACT WITH THE TARGET CONVERSANTS.	8
WHEN OPERATING UNDER CONDITIONS OF DIVIDED ATTENTION, ADVANCE INFORMATION ABOUT THE PROBABLE CONTENT OF A SPOKEN MESSAGE CAN ENHANCE ITS RECEPTION.	11
WHEN OPERATING UNDER CONDITIONS OF DIVIDED ATTENTION, (RIGHT-HANDED) LISTENERS SHOULD SITUATE THEMSELVES SO THAT TARGET CONVERSATIONS ARE TO THE RIGHT RATHER THAN TO THE LEFT OR TO THE REAR.	11

CONTENTS (CONTINUED)

	PAGE
REPORTING TARGET CONVERSATIONS	12
HOW CAN FORGETTING BE MINIMIZED?	13
PAY MORE ATTENTION TO INFORMATION TO BE REMEMBERED.	13
ORGANIZE INCOMING INFORMATION	13
CONVERT INFORMATION INTO AN EASY-TO-STORE, EASY-TO-RETRIEVE FORM USING MEDIATORS, IMAGERY, AND MNEMONICS.	15
MINIMIZE THE TIME NEWLY LEARNED INFORMATION MUST RESIDE IN MEMORY.	16
MAXIMIZE THE AMOUNT OF TIME ALLOTTED FOR RETRIEVAL AND THE AVAILABILITY OF RETRIEVAL CUES AT RECALL.	17
HOW CAN A LISTENER HELP ESTABLISH THE CREDIBILITY OF HIS REPORT?	18
USE CONFIDENCE RATINGS.	18
PAY ATTENTION TO CONTEXTUAL CUES	20
SUMMARY AND CONCLUSIONS	20
REFERENCES	23

FIGURES

FIGURE 1.	A TRAINING PROCEDURE FOR SIMULATING SELECTIVE LISTENING UNDER DIVIDED ATTENTION CONDITIONS.	9
FIGURE 2.	AN ILLUSTRATIVE SCALE FOR SCORING THE CONFIDENCE INDIVIDUALS HAVE IN THEIR RECALL.	19

INTRODUCTION

What is selective listening? Selective listening is intended, primarily, as an intelligence gathering technique. The technique depends heavily on an individual's ability to access, monitor, and report oral messages accurately. However, it also entails knowing how to use this ability selectively to give processing priority to messages of possible intelligence value.

The purpose of this paper is to describe the problems involved in selective listening and to identify procedures which may be used to overcome them. It focuses on one important application of the technique: overhearing the conversations of others (hereafter referred to as "target conversations"). The problems considered include accessing, monitoring, and reporting information from target conversations. Procedures for overcoming these problems are presented with supporting experimental evidence.

GUIDELINES FOR EFFECTIVE SELECTIVE LISTENING

Accessing Target Conversations

Accessing target conversations means moving within earshot of them. However, the accessibility of a conversation not intended for one to hear is likely to be poor.

How Can One Enhance The Accessibility of a Target Conversation?

Conceivably, a host of techniques could be used to increase the accessibility of a target conversation. In practice, only one appears feasible. This technique involves accessing target conversations by simultaneously feigning interest in other, unrelated activities. The advantage of this technique is that it conceals the intent of selective

listening. However, its main disadvantage is that it is not a simple technique to employ. To be effective, listeners must know how to select "cover" activities which they can perform convincingly but which do not interfere seriously with the ability to pick up and store information from target conversations.

How Does One Select A Cover Activity?

Research indicates that the following procedures may be useful in selecting an effective cover activity.

Avoid cover activities which impose strenuous demands on attention. A strong positive relationship exists between the amount of attention an individual pays to a spoken message and its understanding (Kahneman, 1970) and retention (Murray & Hitchcock, 1969; Poulton, 1953). This means that cover activities should involve simple, well-practiced behaviors. These behaviors impose few demands on attention (Kahneman, 1970) and can be expected to interfere minimally with the mental operations that occur during selective listening.

Avoid situations which require active verbal participation. Simultaneous listening and speaking is extremely difficult, if not impossible to master (e.g., Broadbent, 1952; Gerver, 1974; Poulton, 1955). Where understanding is of little or no importance, simultaneous listening and speaking are possible (e.g., Carey, 1971). Indeed, performance can become quite impressive with practice (e.g., Solomons & Stein, 1896). Where understanding is important, however, simultaneous

listening and speaking may be possible, but only after extensive practice (e.g., Gerver, 1972). For example, the skill of simultaneous interpretation (Gerver, 1972, 1974) appears very difficult to master, requiring months of continuous practice to achieve a high degree of input/output overlap and an acceptable error rate.

Furthermore, simultaneous listening and speaking impair even highly skilled performers' memories for the content of the input material (Gerver, 1974). This effect, by itself, eliminates cover activities which depend heavily on speech.

How Can One Avoid Speaking During Selective Listening?

Social situations typically afford opportunities to engage in simple, well-practiced cover activities which do not involve speaking. Nevertheless, situations may arise during selective listening where conversation, cannot reasonably be avoided. In these situations, listeners still may be able to minimize their speech by using one of the following procedures.

Converse with a confederate. With the aid of a confederate, it may be possible to alternate roles as speaker and listener. While one speaks, the other, feigning interest in the confederate's story, can attend selectively to nearby target conversations.

Engage in group discussions. Becoming involved in a group discussion can reduce one's speaking load relative to a one-to-one conversation. In fact, a listener in a large group may be able to avoid speaking entirely, freeing the major share of attention for monitoring target conversations taking place outside of the group.

Use short phrases that entail extensive replies. When forced to engage in a one-to-one conversation, one can reduce one's own speech by interjecting comments or posing brief questions that require long replies. For example, saying "Tell me more," typically results in a more detailed response. It is worth noting that this technique is employed commonly by psychotherapists as a means for reinforcing discussion (Brammer & Shostrom, 1968).

Choose a conversant who will do more speaking than listening. It also may be possible to reduce one's verbal output by selecting a conversant who is likely to do most of the speaking. Ideally, this would be done by becoming familiar with one's potential conversants. This selection may be less reliable, but it also can be accomplished using experimentally-based guidelines.

Research indicates that the environment can cause individuals to feel compelled to do relatively more speaking than listening. For example, in one experiment, persons who could see less of their fellow conversants than their fellow conversants could see of them tended to do more speaking than listening (Argyle, Lalljee, & Cook, 1968). This observation suggests that visually impaired individuals may be predisposed to speak more than individuals having normal vision. It also suggests that individuals, in general, who report feelings of being "observed" rather than "observing" may try to compensate through greater verbal participation. If this is the case, individuals who tend to report feelings of being watched would be good choices as conversants.

These include individuals who are being interviewed (rather than interviewing), are in a brighter light, are female, younger, or (for females) with a member of the opposite sex (Argyle, Lalljee, & Cook, 1968).

Monitoring Target Conversations

Effective selective listening demands that target information be picked up and stored accurately. One problem is that this information is likely to be degraded on input. Conversants may use hushed speech or force the listener to contend with heavy background noise. A second problem is that continuous monitoring may be difficult. Cover activities, particularly those which require a listener's active verbal participation, can impose heavy demands on attention. These demands can disrupt monitoring if the listener is not prepared to handle them.

Can One be Trained to Listen Through Background Noise or Operate Effectively Under Conditions of Divided Attention?

Training enhances the intelligibility of speech in noise. Training reduces the deleterious effects of background noise on speech processing (cf. Kahneman, 1970 for a review of the effects of noise on performance). As an illustration, Moser and Dreher (1955) demonstrated that the reception of speech in noise grows progressively better with practice. Similarly, Seashore and Stuntz (1944) found that individuals trained to receive Morse Code through background noise were more effective as code receivers in the presence of background noise than a control group which had received all of its training in the absence of background noise.

Training facilitates performance in situations demanding divided attention. Theory (Broadbent, 1958; Fitts & Posner, 1967) and data (Spelke, Hirst, & Neisser, 1976) support the proposition that individuals can be trained to divide their attention between separate tasks. Ostry, Moray, and Marks (1976), for example, demonstrated that listeners' abilities to monitor auditory signals presented concurrently improve markedly with practice. More compelling, however, are the results of early explorations into the limits of human attentional processes. While these explorations were not concerned directly with the trainability of listening skills, they were designed to examine human capacity to perform effectively under conditions of divided attention.

Spelke et al. (1976) reported that an individual learned to recite one poem while writing another, and while doing mathematical computations. Parallel results were obtained in two experiments on automatic writing (Downey & Anderson, 1915; Solomons & Stein, 1896) which were replicated recently (Spelke et al., 1976). Subjects in those experiments practiced reading stories while taking dictation. Spelke et al. (1976) found that, after prolonged practice, subjects were able to write at dictation, detect relations among dictated words, and categorize words for meaning while simultaneously reading for comprehension at normal speed.

What Training Procedures May Enhance Selective Listening?

Much has been written on listening and methods for improving listening comprehension (cf. Duker, 1966, 1968; Van Matre & Steinemann, 1972).

However, information is lacking on methods for promoting skills specific to selective listening. Currently, the Army Research Institute is working in conjunction with the Defense Intelligence School to strengthen this information base and develop a prototype, media-based course in selective listening. This work is leading to the identification of training methods pertinent to the reception of speech in background noise and under conditions of divided attention.

Selective listening in background noise can be simulated using a radio (or television) and tape recorder. One method for training individuals to listen through background noise can be tried easily and inexpensively. The idea is to tape-record a series of radio (or television) conversations and then try to pick up their information as they are replayed in radio background noise, e.g., other conversations.

One advantage of this method, apart from its simplicity, is that it permits the trainee to regulate the strength of the conversational input vis-a-vis the background noise and, hence, the difficulty of the task. This can be accomplished by raising or lowering the volume level of the tape recorder relative to the radio. More importantly, however, the use of recorded conversations would permit the performer to score his own performance. Research indicates that both learning and performance benefit when more or better knowledge of results is provided during training (cf. Newell, 1977; Schendel & Newell, 1976).

Selective listening under conditions of divided attention can be simulated using two pairs of conversants, each pair consisting of

a speaker and a listener. This training procedure is diagrammed in Figure 1. Each listener's task is to feign interest in his fellow conversant's story (represented by dotted lines), while simultaneously attempting to overhear the other speaker's story (represented by solid lines). Under this procedure, a listener (e.g., $Listener_1$) can receive immediate knowledge of results about his ability to appear interested in one story (i.e., $Speaker_1$) while listening selectively to another (i.e., $Speaker_2$). In addition, a listener's recall of what he overhears can be assessed directly by the relevant speaker (i.e., $Speaker_2$).

What Strategies Can a Listener Employ During Performance to Enhance the Processing of Target Information?

When operating in heavy background noise, it may be beneficial to maintain some visual contact with the target conversants. Speech in noise is perceived more accurately if the speakers are visible than if they are not (Sumby & Pollack, 1954). It may be difficult, however, to pick up visual cues from a target conversation without making either a fellow conversant or the target conversants feel uncomfortable. A flicker of the eye can make a fellow conversant feel that he is no longer the center of interest, while it may have just the opposite effect on the target conversants.

How can visual cues from a target conversation be picked up without alerting either a fellow conversant or the target conversants?

Research on nonverbal communication through eye contact pertains to the first problem. Eye contact plays an integral part in interpersonal

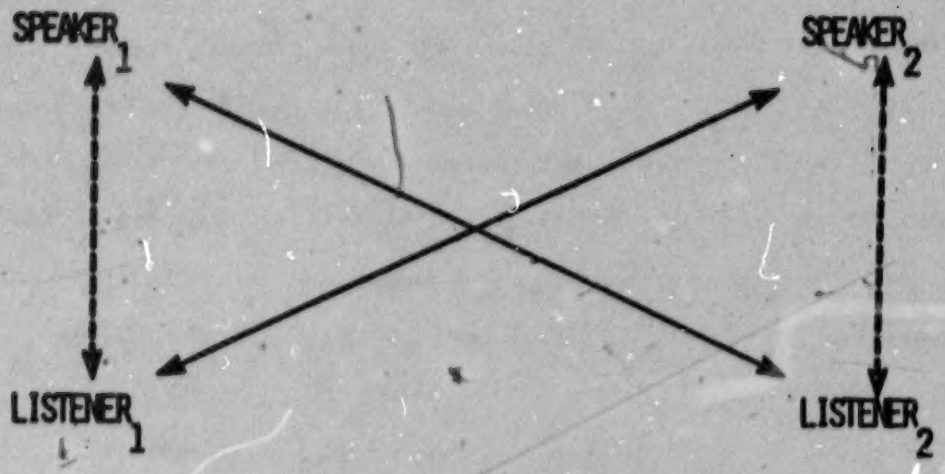

Figure 1. A training procedure for simulating selective listening under divided attention conditions

communication (cf. Argyle & Dean, 1965; Duncan, 1969), but it is relatively simple to avoid. One way this can be accomplished is to be "forced" to stand very close to a fellow conversant. As an illustration, in one experiment, there was less eye contact the closer two conversants were placed next to each other. And, this effect was stronger for opposite-sexed than for same-sexed conversants (Argyle & Dean, 1965). In this regard, Hall (1955) reports that when two people are forced to stand closer than 18 to 20 inches apart (add four inches for opposite-sexed pairs), they will turn and stand at right angles to each other or stand side by side.

A second way to avoid eye contact with a fellow conversant is to sit at right angles to him. Sommer (1967) reported that two conversants at a table prefer to occupy corner seats so that they are close to each other but do not have to face each other directly. In this way, visual contact with a fellow conversant should not be difficult to avoid.

No research was found relevant to the problem of avoiding eye contact with a target conversant. However, one way this problem may be resolved is apparent. Rather than focusing one's vision directly on the target conversants, one's gaze might be directed at a point of apparent interest on the far side of the target conversants. In this way, the target conversants would be viewed peripherally. Used sparingly and from a reasonable distance, this strategy, presumably, would be difficult to detect and would enhance the availability of visual cues from the target conversation.

When operating under conditions of divided attention, advance information about the probable content of a spoken message can enhance its reception. A selective listener can increase the probability of overhearing specific bits of information by being precued as to when to listen and what to listen for (e.g., Murray & Hitchcock, 1969; Poulton, 1953). In addition, he can retain cue-relevant material longer when cues are given than when they are not (e.g., Peeck, 1970). This suggests that, whenever possible, one should know in advance the important topics which may be discussed and who may discuss them with whom.

Presumably, however, there are circumstances under which precueing would not be advisable. Precueing affords benefits, but there are costs involved. For example, several investigators have reported that individuals are less likely to retain non-cued information when cues are provided than when they are not (cf. Gagne, in press). In other words, there is less incidental learning when precues are provided. This suggests that precues ought to be used only when specific information is being sought.

When operating under conditions of divided attention, (right-handed) listeners should situate themselves so that target conversations are to the right rather than to the left or to the rear. Few aspects of listening appear "wired in," showing no susceptibility to the effects of experience. Even auditory sensitivity can be raised if cues about the loudness, frequency, or time of arrival of a signal are given immediately in advance of its presentation (e.g., Swets, 1963). There is

evidence, however, that when individuals listen to messages delivered dichotically over earphones (i.e., one message delivered to each ear), the message presented to the ear opposite the dominant cerebral hemisphere is identified and remembered better (e.g., Bartz, Satz, Fennell, & Lally, 1967; Borkowski, Spreen, & Stutz, 1965; Hublet, Morais, & Bertelson, 1976). In other words, right-handed individuals, generally, will demonstrate an advantage for messages coming from the right; left-handed individuals will demonstrate an advantage for messages delivered from the left.

Some related evidence indicates that messages delivered to the front of a listener are perceived more accurately than messages delivered to the back (Hublet et al., 1976). Furthermore, one pair of researchers (Doehring & Bartholomeus, 1971) found that a voice delivered to the ear opposite the dominant cerebral hemisphere was recognized better than the same voice presented to the other ear. However, this latter result has not been replicated elsewhere (e.g., Bartholomeus, 1974; Doehring & Ross, 1972).

Reporting Target Conversations

Effective selective listening requires that listeners do more than overhear target conversations. They also must be skilled in handling the problems associated with recounting what they have heard. These problems include minimizing forgetting and helping to establish the credibility of information that has been picked up.

How Can Forgetting be Minimized?

During selective listening, there is no convenient way to record incoming target information. It must be memorized. This means that, until this information can be recounted, it is susceptible to the deleterious effects of forgetting. Target information may be lost from memory before it is reported. Alternatively, it may be reported inaccurately. This latter possibility is especially disturbing because inaccurate reports may be misleading.

There are several effective methods for enhancing the retainability of information in memory or for prompting its retrieval at the time of recall. A number of these methods are outlined below.

Pay more attention to information to be remembered. The duration of information in memory depends greatly on the amount of attention an input receives during storage. Evidence indicates that new information can be lost in a matter of seconds if an individual's attention is diverted from it immediately after presentation (e.g., Peterson & Peterson, 1959). Of course, focusing one's attention on incoming target information means diverting it from other, more irrelevant sources of information. However, attention can be diverted from simple, well practiced (cover) activities without seriously disrupting their performance (e.g., Spelke et al., 1976).

Organize incoming information. The importance of organization in memory was recognized early (e.g., Katona, 1940), and it has been reemphasized repeatedly (e.g., Bower, 1970; Mandler, 1967; Tulving & Donaldson, 1972). Organization involves setting new information into

the framework provided by existing memories. It is an active process, involving the learner's time and effort, but it permits more information to be stored and makes information much easier to locate at the time of retrieval.

In organising target information, it is essential that the listener listen for ideas that will enable him to reconstruct what he has heard. He must try not to get bogged down in factual details. As Nichols and Stevens (1964, p. 9) suggest:

> Memorising facts is, to begin with, a virtual impossibility for most people in the listening situation. As one fact is being memorized, the whole, or part, of the next fact is almost certain to be missed. When he is doing his best the listener is likely to catch only a few facts, garble many others, and completely miss the remainder.

Organising means keeping the parts in proper relation to the whole. This, in itself, can enhance memory for specifics. To quote Nichols and Stevens (1964, p. 9):

> Grasping ideas, we have found, is the skill on which the good listener concentrates. He remembers facts only long enough to understand the ideas that are built from them. But then, almost miraculously, grasping an idea will help the listener to remember

the supporting facts more effectively than does the person who goes after facts alone.

Convert information into an easy-to-store, easy-to-retrieve form using mediators, imagery, and mnemonices. Using mediators means bringing past language experience to bear on the organization of information to be learned. Typically, the input is organized by converting it into a word or phrase. This conversion is usually accomplished by the learner (e.g., Adams, 1967; Prytulak, 1971), although it may be supplied instructionally as an aid to retention (e.g., Duffy & Montague, 1971). For illustration, the mediator SALUTE currently is used to facilitate the retention of the steps involved in reporting enemy information: Size, Activity, Location, Unit, Time, and Equipment. Presumably, mediators could be used during selective listening to enhance the retention of everything from names, numbers, and lists (cf. Cermak, 1976) to nonsense materials (e.g., Montague, Adams, & Kiess, 1966).

Images, like mediators, can enhance memory for a wide range of everyday information (cf. Paivio, 1971) and may be valuable, particularly where the information to be remembered is not readily susceptible to verbal description. Imagery may be either direct or indirect (Cermak, 1976). Direct imagery involves forming a mental picture of whatever it is that is to be remembered. Indirect imagery, on the other hand, involves changing the information to be remembered into something that can be imagined more easily. For example, the name "Woodworth" may evoke direct images of an individual, or it may evoke indirect images

of, say, an expensive wooden sculpture. In either event, the more vivid or bizarre the image, the better retention will be (e.g., Paivio, Yuille, & Madigan, 1968).

Mnemonics differ from mediators and images in that they provide a pre-established scheme for organizing information to be learned. Examples of mnemonics include rhymes, e.g., "Thirty days hath September...," "I before e except after c...," and the less familiar, but demonstrably powerful, method of loci (e.g., Groninger, 1971). This method, developed by the ancient Greeks, involves forming images of things to be remembered and storing those images in locations of a spatial image. At recall, retrieval becomes a matter of mentally moving within this spatial image, finding the images of things to be remembered, and recalling them (Adams, 1976).

Evidence attests to the effectiveness of mnemonics as memory aids (cf. Norman, 1969). Of course, the key advantage of mnemonics for the selective listener is that they can be developed in anticipation of selective listening and practiced outside of the listening situation.

Minimize the time newly learned information must reside in memory. Reducing the amount of time new information is in storage, generally, increases its probability of being retrieved at the time of recall. Immediate memory for newly acquired verbal information typically is high, unless rehearsal is disrupted (e.g., Peterson & Peterson, 1959). However, research suggests that we tend to forget much, if not most, new

learning within a few hours (e.g., Ebbinghaus, 1964; Jenkins & Dallenbach, 1924). Of course, the extent to which new information can be retained depends on a host of variables, including nature of the material to be remembered (cf. Cofer, 1969), degree of learning (e.g., Craik & Lockhart, 1972), interfering activities (e.g., Postman, 1961), and manner in which retention is measured (e.g., Postman & Rau, 1957).

Maximize the amount of time allotted for retrieval and the availability of retrieval cues at recall. Increasing the time afforded for recall, or providing multiple recall opportunities, tends to facilitate retrieval (e.g., Hogan & Kintsch, 1971). For example, in one experiment, subjects retrieved more than twice as much information over a sequence of 15 recall trials than they did on their initial trial (Adams, Marshall, & Bray, 1971).

Retrieval cues also can be effective in prompting information from memory (e.g., Tulving & Patterson, 1968). A cue can be information presented during learning, or the cue may be information that was not presented explicitly but that bears some specified relation to the information to be remembered. As an illustration, target information might be prodded from a listener's memory by reinstating the context and the cues of the listening situation at the time of recall. Simply returning to the room in which some forgotten piece of information was learned can enhance its retrieval (e.g., Bilodeau & Schlosberg, 1951; Greenspoon & Ranyard, 1957). Similarly, having the names of the individual conversants who were present at the time of selective listening

may spur one's memory for conversations which occurred. Alternatively, being provided a list of topic areas related to the information one may have overheard during selective listening may facilitate its retrieval (e.g., Bilodeau, 1967; Thompson & Tulving, 1970).

How Can A Listener Help Establish The Credibility Of His Report?

Use confidence ratings. Inaccurate reports can be misleading. How can one determine if information reported has been recalled inaccurately?

Recent theories of learning and memory (e.g., Adams, 1971; Adams & Bray, 1970; Schmidt, 1975) postulate that learners are aware of the correctness of their recall. Furthermore, data are available to substantiate this claim. Learners report low confidence in errors and high confidence in correct responses (e.g., Adams & Bray, 1970). This suggests that, when target information is being reported, it may be beneficial to have listeners scale their confidence in their recall.

An illustrative confidence scale is presented in Figure 2. Using this scale, a listener would assign a confidence value from one to five to each piece of information he reports. This method affords two distinct advantages. First, information that has been recalled incorrectly is likely to be identified. Second, information that is recalled with low confidence, and that a listener may therefore be reluctant to report, may be reported freely. This information may have intelligence value, but it is likely to be inhibited under more rigid methods of reporting (e.g., Adams & Bray, 1970).

Assign a confidence value from 1 to 5 to each piece of information that you report:

1. I am very sure I recalled this information accurately.
2. I am fairly sure I recalled this information accurately.
3. I don't know if I recalled this information accurately.
4. I am fairly sure I did not recall this information accurately.
5. I am very sure I did not recall this information accurately.

Figure 2. An illustrative scale for scoring the confidence individuals have in their recall

Pay attention to contextual cues. Conversations occur in varying contexts, and this contextual information is important in establishing the credibility of what was said. For example, knowing how something was said provides information relating to the earnestness of the conversants.

Knowing the identities of the conversants also can help in establishing whether or not a piece of intelligence is worthy of belief. For example, intelligence picked up from subject-matter experts typically has more credibility than that obtained from laymen's conversations. However, determining the identities of target conversants can be difficult during selective listening. Visual recognition is not always possible. Furthermore, vocal recognition may be hindered because voice cues are not rehearsable (e.g., Geiselman & Bellezza, 1976). The physical properties of a voice come to be recognized only through repeated exposure to the voice itself. This suggests that one should try to take advantage of opportunities to learn the voices as well as names of prospective target conversants before they engage in conversations.

SUMMARY AND CONCLUSIONS

Selective listening is intended, primarily, as an intelligence gathering technique. One purpose of this paper was to identify the problems associated with its use in the important application of overhearing

the conversations of others, i.e., target conversations. The problems identified include accessing, monitoring, and reporting the contents of these conversations. A second purpose was to recommend procedures for overcoming these problems. These procedures are reviewed briefly in the following paragraphs.

a. The accessibility of target conversations can be improved by the listener's engaging in simple, well-practiced cover activities which do not require active verbal participation. During selective listening, the need to speak may be reduced by working with a confederate, engaging in group conversations, using short phrases that entail extensive replies, or choosing fellow conversants who are likely to do more speaking than listening.

b. The ability to monitor target conversations can be enhanced through training. It also may be enhanced by maintaining some visual contact with the target conversants, having advance information about the probable content of their speech, or by situating oneself so that they are to the right rather than to the left (for right-handed listeners) or to the rear.

c. The ability to report information from target conversations can be improved by strengthening the representation of this information in memory. This may be accomplished by paying more attention to it, emphasizing its organization, or using mediators, images, and mnemonics. Performance at the time of recall may be boosted further by minimizing

the time newly learned information must reside in memory, allowing more time for its retrieval, and maximising the availability of retrieval cues.

Listeners can help establish the credibility of their reports by indicating their confidence in the accuracy of their recall and by noting how the target message was delivered and who delivered it to whom.

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This report presents a summary of an extensive literature survey designed to identify the problems involved in selective listening and to recommend procedures for handling them. Selective listening is intended, primarily, as an intelligence gathering technique. It involves focusing attention on oral messages of possible intelligence value. This report dealt with one important application of the technique, namely, overhearing the conversations of others. The problems considered include moving within earshot of these conversations, picking up and storing their information, and recounting their contents. Procedures for over-

20. coming these problems appear with supporting experimental evidence.